

## Research Highlight:

### Differential diagnosis of dementia using physiological measures

Aditi Joshi, Ph.D.<sup>1,2</sup>

Departments of Neurology<sup>1</sup> David Geffen School of Medicine, University of California at Los Angeles; V.A. Greater Los Angeles Healthcare System,<sup>2</sup> Los Angeles, California;  
**Correspondence:** Aditi Joshi; 11301 Wilshire Blvd., Los Angeles, CA. 90073 USA;  
Email: [aditijoshi@mednet.ucla.edu](mailto:aditijoshi@mednet.ucla.edu)

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## Introduction

Alzheimer's disease (AD) and dementia with Lewy bodies (DLB) are two common types of dementias with overlapping clinical features. Given the differences in disease specific therapies, accuracy of diagnosis during life is of prime importance<sup>1, 2</sup>. Post-mortem neuropathological exams confirm diagnosis of AD. However during life, few diagnostic tests distinguish AD from other dementia types. Currently, I-metaiodobenzylguanidine (MIBG) scans are used to diagnose DLB<sup>3</sup> and differentiate it from other dementias. However, these scans are expensive and time consuming and hence, alternative diagnostic methods need to be explored. Scientific curiosity for autonomic function tests in neurological disorders has been

increasing to achieve accurate differential diagnosis<sup>4</sup>.

## Diagnostic test study

Negami *et al.*, in their paper "Sympathetic skin response and heart rate variability as diagnostic tools for the differential diagnosis of Lewy body dementia and Alzheimer's disease: a diagnostic test study" proposed use of autonomic physiological measures - CVAA, SSR and HRV (LF/HF)- to distinguish between the dementias<sup>5</sup>. The study compared 20 probable AD patients to 20 probable DLB patients (matched on age, gender and disease severity) to assess autonomic dysfunction. SSR data were collected after median nerve stimulation whereas CVAA and HRV data were collected at rest for two minutes. Probable DLB patients had lower SSR and HRV

(LF/HF) as compared to probable AD patients, signifying a reduced sympathetic function. Using receiver operating characteristics (ROC) curves, cut-off score was obtained. Further analysis showed that, all probable DLB patients had abnormalities either in SSR or HRV whereas only 35% probable AD patients had abnormalities in SSR or HRV. When the diagnoses were reconfirmed using MIBG scans, the DLB patients were accurately diagnosed with SSR and HRV.

### **Significance**

The study provides an inexpensive, less time consuming method of accurate diagnosis as compared to the current standard care procedures such as MIBG. The study has two major weaknesses viz. small sample size and lack of healthy controls. Yet, the study advances field in new direction i.e. to use physiological measures for differential diagnosis of

dementias. Use of this technique will advance healthcare in countries with limited access to state-of-art technologies such as MIBG.

### **References**

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